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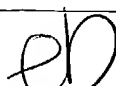
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,264	12/05/2000	Benjamin A. Bonner	005082/CMP	9053
32588	7590	03/25/2004	EXAMINER	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			DEO, DUY VU NGUYEN	
			ART UNIT	PAPER NUMBER

1765

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/731,264	<b>Applicant(s)</b> BONNER ET AL.	
	<b>Examiner</b> DuyVu n Deo	<b>Art Unit</b> 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7-13, 15, 17, 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear if the limitation of "conditioning the first polishing pad only...material" is a different step from "rinsing said polishing pad with a rinsing fluid." At this time, the rinsing step is regarded the same as the conditioning the first polishing pad since page 6, lines 14-20 describe conditioning step is done by applying conditioning fluid to the pad.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7, 9, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (JP 11-138418), and further in view of Woo (US 5,816,891).

US 6,191,038 is considered as the correct translation of JP 11-138418 and its translation will be provided upon applicant's request

Yoshida describes a method for polishing semiconductor substrate comprising: polishing the substrate to remove a first portion of the substrate by holding the substrate against the pad with a polishing force while applying a slurry to the pad; dressing the pad or claimed rinsing or conditioning the polishing pad (please see Kistler cited below); polishing the substrate to remove a second portion of the substrate by holding the substrate against the pad with a polishing force while applying the slurry to the pad. The dressing step is done during the removal of the first and second portions of the substrate (col. 13, line 1-36). Unlike claimed invention, Yoshida doesn't describe transferring and polishing the substrate at a second polishing station.

Woo teaches a method for CMP of semiconductor substrate where he describes transferring and polishing the substrate at a second polishing station (col. 5, line 39-65; col. 7, line 23-55). It would have been obvious for one skilled in the art to modify Yoshida's method in light of Woo because Woo teaches that polishing at different polishing pad (or polishing station) would reduce polishing time, results in less polish pad loading, and highest polish rate produced by a freshly conditioned polished pad can be maintained (col. 5, line 38-55).

Referring to claim 9, the first and second portion would have to equal to the amount selected for first and second polishing steps. This would read on claimed of first and second portion equal to selected amount.

Referring to claim 11, rinsing and cleaning the pad with deionized water is well known to one skilled in the art (please see cited Cadien and Kistler below).

Unlike claim 12, Yoshida doesn't describe the substrate is held against the pad with a 0 psi force while rinsing the pad. However, he describes the rinsing step starts after the first polishing step is finished and in the substrate is pressed against the pad starting the second

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polishing step (col. 13, line 13-25). This would indicate that the wafer is held against the pad with no force. Therefore, it would have been obvious that the substrate would not forced against the pad while rinsing because there is no polishing of the substrate during the cleaning of the pad

Referring to claim 13, it would be obvious that the polishing of the substrate could be at the second polishing before the first polishing station as long as each station could be used to polish the substrate with an expectation of a reasonable success.

5. Claims 1-6, 8, 10, 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida or Yoshida/Woo and admitted prior art.

Yoshida describes a method for polishing semiconductor substrate comprising: polishing the substrate to remove a first portion of the substrate by holding the substrate against the pad with a polishing force while applying a slurry to the pad; dressing the pad or claimed rinsing the polishing pad; polishing the substrate to remove a second portion of the substrate by holding the substrate against the pad with a polishing force while applying the slurry to the pad (col. 13, line 1-36). Unlike claimed invention, Yoshida doesn't describe polishing the substrate with a cerium-based polishing fluid. Admitted prior describes an unstable polishing slurry for oxide such as one from Hitachi Chemical slurry including cerium oxide and polycarboxylate additive. The slurry from Hitachi Chemical selectively polishes oxide to the nitride (pages 1, 2, and page 4, line 4-17). Since a polishing slurry being used would depend on the type of material being polish and Yoshida further suggests that a BPSG, an oxide layer, can be polished in one of the embodiment (col. 17, line 18-19), it would have been obvious for one skill in the art to use a

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cerium slurry such as one from Hitachi Chemical because it would polish oxide with selectivity to the nitride with a reasonable expectation of success.

Referring to claim 3, the first and second portion would have to equal to the amount selected for first and second polishing steps. This would read on claimed of first and second portion equal to selected amount.

Unlike claim 6, Yoshida doesn't describe the substrate is held against the pad with a 0 psi force while rinsing the pad. However, he describes the rinsing step starts after the first polishing step is finished and in the substrate is pressed against the pad starting the second polishing step (col. 13, line 13-25). This would indicate that the wafer is held against the pad with no force. Therefore, it would have been obvious that the substrate would not forced against the pad while rinsing because there is no polishing of the substrate during the cleaning of the pad.

Referring to claim 5, rinsing and cleaning the pad with deionized water is well known to one skilled in the art (please see cited Cadien and Kistler below).

Referring to claims 4, 10 using either stable or unstable polishing slurry which is mixed in a point of use mixing system before use is well known to one skilled in the art as shown in pages 1 and 2 of the specification. Therefore, using slurry such as slurry mixed in a point of use would have been obvious to one skilled in the art in order to provide a slurry to polish the substrate with an expectation of a reasonable success.

6. Cadien et al. (US 5,954,975) is cited to show prior art (col. 9, line 27). Kistler et al. (US 6,340,326) is cited to show prior art (col. 7, line 35-44).

***Response to Arguments***

7. Applicant's arguments filed 1/29/04 have been fully considered but they are not persuasive.

Referring to applicant's argument that the suggestion (to use cerium slurry such as one from Hitachi Chemical because it provides a selectivity polishing to the oxide) is not found in the prior art, but on the applicant's disclosure. Clearly, page 4, line 4-17 describes the property of known cerium slurry from Hitachi Chemical that selectively polishes the oxide to the nitride. APIECE of prior art, disclosed anywhere, is still a prior art, even in the applicant's specification. Therefore, the combining of the Yoshida and admitted prior art still deemed proper and the motivation or suggestion has been provided by the known property of the cerium slurry from the Hitachi Chemical as disclosed in page 4, line 4-17 of the specification.

Referring to applicant's argument that it would not obvious to combine cerium-base slurry with Yoshida's method because it doesn't offer the problem of accumulation of material on the polishing that is addressed by Yoshida is found unpersuasive because there is no teaching from Yoshida to use the slurry that offer the problem of accumulation since the accumulation, as suggested by Yoshida, is coming from the materials polished from the substrate.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6:00-3:30; with alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DVD

3/19/04

